

25

A Practical Method for Recovery of Krypton from Air.  
(In Russian.) V. G. Fastovskii, Yu. V. Petrovskii,  
and M. B. Stolper. *Kislorod (Oxygen)*, v. 4, Nov.,  
Dec. 1947, p. 22-33.

Describes and diagrams improvements of the  
Linde-Frankl process by which, it is claimed,  
yields of krypton may be greatly increased. In-  
cludes operation and installation procedures. Nu-  
merous charts, tables, and diagrams.

CA

18

Technical methods for the production of krypton and xenon and their application. V. G. Fomovskii. *Kislovodsk 4*, No. 1, 5-14 (1947); *Chem. Zvest.* (Russian Zone Ed.) 1948, II, 342.—The tech. sepn. of Kr and Xe from O<sub>2</sub> is described with the aid of graphs. The presence of C<sub>2</sub>H<sub>2</sub> (2-10 × 10<sup>-6</sup> parts by wt.) presents difficulties in the initial step of the process. The C<sub>2</sub>H<sub>2</sub> is removed by catalytic combustion. An initial Kr. concentrate of 0.15-0.20% is freed from C<sub>2</sub>H<sub>2</sub>, CO<sub>2</sub>, and H<sub>2</sub>O and then concd. in a 2nd Kr column to 20-40%. Two plants are described.

M. G. Moore

FASTOVSKIY, V G.

0000 AEC-tr-1240

✓ ANALYSIS OF GAS MIXTURES BY DETERMINATION OF  
HEAT CONDUCTIVITY, V. G. Fastovskii (Fastovskiy) and

A. Ye. Rovinskii (Rovinskii). Translated from Zavodskaya  
Lab. 10, 1157-81 (1943). 5p.

A device for the analysis of gas mixtures by determination  
of their heat conductivity is described. The apparatus is  
very convenient, permitting analysis in 2 to 3 minutes, and  
is suitable for continuous operation with automatic record-  
ing of results. Gas consumption for analysis does not ex-  
ceed 100 to 200 ml. If so desired, all the gas may be col-  
lected in a gas holder, thus reducing losses to zero. During  
continuous analysis, the rate of passage of the gas through  
the apparatus is 40 to 60 ml/min. The analyzed gas may then  
be joined with the main gas flow. (auth)

12-11 Elect. Tech. Inst.

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6

PROCESSING AND PROPERTIES INDEX

Determination of Small Concentrations of Krypton.  
(In Russian.) V. G. Fyodorov. *Zavodskaya Laboratoriya* (Factory Laboratory), v. 15, Dec. 1949, p. 1417-1420.  
Describes method and apparatus used for the above.  
All "active" gases are first eliminated by chemical means. Krypton is determined in the residue containing Kr, Ar, and N<sub>2</sub> by density determination or measurement of pressure of the saturated gas at the temperature of liquid oxygen. Apparatus is diagrammed.

OPEN  
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*FASTOVSKIY, V. G.*

FD-878

USSR/Chemistry - Chemical engineering.

Card 1/1      Pub.50 - 11/24

Author : Fastovskiy, V. G., Prof, Dr Tech Sci; Petrovskiy, Yu. V.

Title : Study of columns containing a multi-layer net filling

Periodical : Khim. prom., No 6, 357-364 (37-44), Sep 1954

Abstract : Investigated experimentally the performance with respect to mass transfer and heat transfer of columns containing a net filling consisting of 1-7 layers. Compared the performance data with those obtained on columns containing other types of fillings (ceramic rings, saddle-shaped elements). Found that by using a five-layer net filling an optimum reduction of the dimensions of the column is obtained. Because of the superior performance obtained with this type of filling, recommend its use in industrial distillation and absorption columns. Twelve references, 5 USSR, all since 1940. Six figures, 9 graphs, 6 tables.

Institution :

Submitted :

FASTOVSKIY, V.G.

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Continuous analysis of ozone in gas mixtures by means of an ultraviolet photoelectric colorimeter. V. G. Fastovskii and A. B. Rovinskii. *Zhurnal Fiz. Khim.* 21, 1630-2 (1953).  
Based on the fact that  $O_3$  absorbs ultraviolet light, 2300-2480 Å., the following method of analysis was developed. A stream of gas contg.  $O_3$  (up to 0.8%) is passed through a cuvette, then through a plug of pyrolysate removing all of the  $O_3$ , and through another identical cuvette. Both are illuminated by the same Hg source (23% 2537 Å.) and the difference of elec. current produced by identical photoelements is amplified and recorded. Sketches of the app. and amplification circuit are shown. I. Benicowitz

(2)

Row

14

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FASTOVSKIY, V. G.

✓ 1549. Distillation method for determination of small amounts of impurities in gases. V. G. Fastovskii, A. R. Rovinskii and A. A. Vlasov. *Zavod. Lab.*, 1955, 21 (10), 1158-1159. — An apparatus involving condensation and evaporation of gases is described; contents are found from pressure readings. It is suitable for determining the purity of krypton. G. S. Smith

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CONFIDENTIAL

Preparation of ground the silent electrical discharge  
G. B. Baryshev and A. B. Ryzhenko, Izv. Akad. Nauk SSSR  
1974, 19, 1504-1509. The yield of  $O_2$  in the  
from  $O_2$  and hydrogen was determined as a function of the applied  
voltage  $U$ , the gas velocity,  $0.005-1$  mm/s, and the  
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**"APPROVED FOR RELEASE: 08/22/2000**

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FASTOVSKIY, V. G.

The liquid-vapor equilibrium in the argon-oxygen system.  
V. G. Fastovskiy and Yu. V. Petrovskiy (V. I. Lenin Elec-  
trotech. Inst., Moscow). *Zhur. Fiz. Khim.* 29: 1311-17  
(1955).—The equil. in the A-O<sub>2</sub> system was studied at a  
const. total pressure because of its importance in the indus-  
trial sepn. of the 2 gases. The specially designed app. and its  
use are described in detail. The system was investigated  
at 1.2, 1.5, 1.7, and 2.0 atm. total pressure, and th. equil.  
compn. of the gas and liquid phases are given for 8 propor-  
tions of the components. The equil. gas compn. was calcd.  
from the experimentally detd. relation between the b.p. of the  
liquid and its compn., and the exptl. results are compared  
with the calcd. results. Their good agreement permits the  
application of the van Laar equation with the coeffs. calcd.  
for 4 of the pressures. A diagram of liquid compn.-equil.  
compn. of the vapor was constructed from the data for use in  
designing industrial sepn. app. W. M. Sternberg

FASTOVSKIY, V. G.

Film rectification. V. G. Fastovskii and Yu. V. Petrovskii. *Kh. m. Prom.* 1956, 230-4.—Film rectification was

studied in the turbulent flow range of a vapor phase with total reflux, in a wetted-wall column, illustrated schematically and described in detail. The principal resistance to material transfer in film rectifiers is in the vapor phase; the resistance in the liquid can in practice be neglected. Hydrodynamic analogy can be applied to film-rectification app., and be used for the app. design

W. M. Sternberg

FASTOVSKIY, V.G., doktor tekhnicheskikh nauk; ROVINSKIY, A.Ye.,  
kandidat tekhnicheskikh nauk.

Improving the cooling of mercury-arc rectifiers. Vest.elektroprem.  
27 no.6:56-59 Je '56. (MLRA 10:8)

1.Vsesoyuznyy elektrotekhnicheskiy institut imeni Lenina.  
(Mercury-arc rectifiers)

PASTOVSKIY, V.G.; PETROVSKIY, Yu.V.

Experimental study of counterflow condensation. Zhur.prikl.khim.  
29 no.5:723-730 My '56. (MLRA 9:8)  
(Distillation, Fractional)

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FAST V. G. V. G.

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FASTOVSKIY, V.G.

USSR/Chemical Technology. Chemical Products and Their  
Application. Preparation and separation of gases.

I-10

Abs Jour : Referat Zhur- Khimiya, No 4, 1957, 12716

Author : Fastovskiy V.G., Rovinskiy A.Ye.

Title : Preparation of Ozone by Silent Electric Discharge

Orig Pub : Zh. prokl. khimii, 1956, 29, No 9, 1309-1315

Abstract : Experimental investigation of the process of formation of ozone (I) in tubular, glass ozone generators (diameter of inner electrode 51 mm, average width of discharge gap 3.2 mm). Determined were the contents of I in dry O<sub>2</sub> and air, on inner electrode voltage of  $U = 8 \div 12.5$  Kv and exposure  $\tau$  up to 125 seconds. It was found that the process of ozone generation is defined by a kinetic equation derived on the assumption that rate of formation of I is constant while rate of decomposition of I is proportional to its concentration. Given are the values of maximal concentrations of I and constants of the kinetic equation

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USSR/Chemical Technology. Chemical Products and Their  
Application. Preparation and separation of gases.

I-10

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 12716

APPROVED FOR RELEASE: 08/22/2000 CIA-RDP86-00513R000412510002-6"

for the investigated voltage levels; at 12.5 Kv and  $\tau = 2$  minutes, concentration of I attained: in O<sub>2</sub>, over 6% by weight and in air 2.75% by weight. On saturation of O<sub>2</sub>, saturated with moisture, concentration of I decreases (all other conditions being the same), by 77-90%. Included are a diagram and description of an ozonator which makes it possible to obtain  $> 70$  liter/hour of gas with a content of I  $> 5.5\%$  by weight. Yield of I, on the basis of power consumption, obtained with this apparatus at the highest concentrations of I, is of  $\sim 14$  g I per kilowatt hour; with decrease in concentration of I and decrease in U, the yield of I increases appreciably.

Card 2/2

- 143 -

USSR/ Chemistry - Physical chemistry

Card 1/1 Pub. 147 - 10/35

Authors : Fastovskiy, V. G., and Petrovskiy, Yu. V.

Title : Investigation of liquid-vapor equilibrium in an argon-nitrogen system.  
Part 2

Periodical : Zhur. fiz. khim. 30/1, 76-78, Jan 1956

Abstract : The liquid-vapor phase equilibrium in an argon-nitrogen system was investigated at pressures of 912, 1520, 2280 and 3040 mm of mercury column (1,2; 2.6; 3.0 and 4.0 atm. abs.). Data are given on the equilibrium compositions of liquid and vapor and the corresponding temperatures for five different mixtures. The components of the equilibrium vapor were computed on the basis of the boiling point/liquid component relation. The application of the van Laar equation with coefficients the values of which were determined for four investigated pressure, is discussed. Six references: 4 USSR, 1 Germ. and 1 Eng. (1916-1955). Tables; graphs.

Institution : Electrical Engineering Inst. im. V. I. Lenin, Moscow

Submitted : May 3, 1955



FASTOVSKIY, V.G.

USSR/ Physical Chemistry - Thermodynamics. Thermochemistry. Equilibrium.  
Physicochemical analysis. Phase transitions

B-8

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11157

Author : Fastovskiy V.G., Petrovskiy Yu.V.

Title : Investigation of Liquid-Vapor Equilibrium in the System O<sub>2</sub>-Kr.

Orig Pub : Zh. fiz. khimii, 1956, 30, No 3, 589-592 (English summary)

Abstract : By means of the previously described (RZhKhim, 1956, 42596) experimental unit and operating procedure data have been secured concerning the equilibrium composition of liquid and vapor, at different temperatures, in the case of five different O<sub>2</sub>-Kr mixtures. In the coordinates  $\ln p$  ( $p$  -- absolute pressure in mm Hg),  $1/T$ , the experimental points for each mixture fit straight lines located in intermediate positions between lines of pure components. From these graphs were plotted  $T - \varphi(x)$  curves, where  $x$  (respectively,  $y$ ) -- mole % O<sub>2</sub> in liquid (in vapor), at absolute pressures 2128, 2230, 3700 and 5170 mm Hg (0.5, 2.0, 4.0 and 6.0 kg/cm<sup>2</sup>, excess). On the basis of calculated equilibrium compositions of vapor,  $T - \psi(y)$  curves were plotted for the same pressures. Satisfactory agreement between calculated and experimental values shows that the system under study,

Card 1/2

PASTOVSKIY, V. G.

"Experimental Data Obtained during the Boiling of a Number of Organic Liquids and Mixtures of them with Water."

report presented at the scientific and technical session on Heat Exchange during change of aggregate state of matter, Kiev 23-28 Sept 57.

All-Union Electro-Tech. Inst.

*Fastovskiy, V.G.*

AUTHORS: Fastovskiy, V. G., Petrovskiy, Yu. V.

64-8-7/19

TITLE: Rectification Method for the Production of the Pure Krypton (Rektifikatsionnyy sposob polucheniya chistogo kriptona).

PERIODICAL: Khimicheskaya Promyshlennost', 1957, Nr 8, pp. 28-32 (USSR)

ABSTRACT: In the investigation of the conditions under which the solid phase in the oxygen-krypton-system is formed it was found that no precipitation of the solid phase occurs at 1,5-2 atmospheric pressure. This admits the carrying out of the rectification of a rich concentrate at such a pressure and to obtain here a chemically pure krypton. Here a periodical rectification of a rich krypton concentrate (10% krypton) was carried out in the mounting-column at 2 atmospheric pressure and technically pure krypton (98-99% krypton) was obtained with 95-96% output. A scheme for an industrial plant for the rectification of a rich krypton concentrate was worked out here. This plant contains the prepurification of the concentrate from the hydrocarbon admixtures, drying and purification of the concentrate from CO<sub>2</sub>, rectification with a production of the technically pure krypton as well

Card 1/2

Rectification Method for the Production of the Pure  
Krypton

64-8-7/19

as a subsequent purification of the same from the oxygen- and hydrocarbon admixtures in fumaces in order to obtain the pure krypton. A rectification plant for the production of a technically pure krypton was planned and built; as well as a device for the removal of oxygen and hydrocarbon admixtures and for the production of pure krypton. The plant and the device are used in a oxygen-krypton-great block which works 20,000 m<sup>3</sup>/hour. There are 6 figures, 1 table, and 10 references, 4 of which are Slavic.

AVAILABLE: Library of Congress

Card 2/2

FASTOVSKIY, V.G.; PETROVSKIY, Yu.V.

Obtaining pure krypton by distillation. Khim. prom. no.8:476-480  
D '57. (MIRA 11:2)  
(Krypton) (Distillation apparatus)

*Fastovskiy, V. G.*

USSR/Fluid Mechanics

Abs Jour: Ref Zhur Mekhanika, No 8, 1957; 9090

Author : Fastovskiy, V. G., Rovinskiy, A. Ye.

Inst :

Title : Investigation of heat output in a spiral tube.

Orig Pub: Teploenergetika, 1957; <sup>4</sup>No 1, 39-41.

Abstract: The effect of the curvature of the tube on the nature of the heat emission during the flow of different fluids through a coil was studied. A schematic drawing and a brief description of the experimental apparatus is included. The experiments were performed for three different heat-carrying substances: water, transformer oil, and a mixture of transformer oil with dichlorethane. The Reynolds Numbers ranged from 63 to 20,900. The ratio of the radius of the tube to the radius of curvature was equal to: 0.016, 0.029, 0.047, and the ratios of the length of the tube to its diameter were, respectively, equal to 580, 1410, and 218. An analysis

Card 1/3

*A-U ElectroTech Inst.*

AUTHOR: Pastovskiy, V.G., Professor, Doctor of Technical Sciences, and Rovinskiy, A.E., Candidate of Technical Sciences.  
TITLE: Evaporative cooling of mercury arc rectifiers. (Ispanitel' noye okhlazhdeniye rtutnykh vypryamiteley.)  
PERIODICAL: "Vestnik Elektromyshlennosti" (Journal of the Electrical Industry) 1957, Vol. 28, No. 4, pp. 50 - 51 (U.S.S.R.)

ABSTRACT: At the present time mercury arc rectifiers are cooled by liquid circulating in a closed circuit with a circulating pump and heat exchanger. The most widely used heat transfer medium is transformer oil. Although it is a good insulator, transformer oil has the disadvantage of high viscosity and a low rate of heat transfer. Other fluids have been used but the complicated system is still required and therefore the system of evaporative cooling is of interest.

When evaporative cooling is used the body of the rectifier is surrounded by liquid which boils. The hot vapours pass through a pipe to a surface condenser and the condensate passes through another pipe to the bottom of the rectifier. The advantages of the system are that the heat transfer rate is high; the vapourisation temperature is constant so long as the pressure in the vapour space is constant; the condenser is small; natural circulation can be maintained in the hermetically-sealed system.

A high voltage mercury arc rectifier operates with a wall temperature of 20 - 24 °C and it is therefore necessary to

Evaporation cooling of mercury arc rectifiers. (Cont.)<sup>394</sup>

use a cooling medium which boils in this temperature range at reduced pressure. Recommended substances are methylene chloride ( $\text{CH}_2\text{Cl}_2$ ) and Freon-11 ( $\text{C Cl}_3\text{F}$ ) the main physical properties of these substances are tabulated. The materials are compared in respect of their suitability for cooling rectifiers, and calculations of cooling surfaces and pipe diameters are made. The calculations show that the cooling system is simple and small. With Freon-11 the system can work at pressures close to atmospheric and the volume of vapour is smaller. The evaporative system can also be used for cooling low voltage mercury arc rectifiers and if necessary an air-cooled heat exchanger can be used. For such a system methylene chloride is best as it boils at atmospheric pressure but Freon-11 can be used if the pressure in the system is about 1.78 atmospheres.

1 figure, no literature references.



FASTOVSKIY, V. G.

7  
The liquid-vapor equilibrium in the oxygen-argon nitrogen system? V. G. Fastovskiy and Yu. Y. Petrovskiy, V. I. Lenin Electrotech. Inst., Moscow. *Zhur. Fiz. Khim.* 48:1111-1115, 1974, 50 refs. Previous work on the O<sub>2</sub>-Ar and Ar-N<sub>2</sub> equilibria and the ternary O<sub>2</sub>-Ar-N<sub>2</sub> system. O.A. 21 1702 were used in the construction of van Laar equations for the ternary O<sub>2</sub>-Ar-N<sub>2</sub> system at 812 mm. (1.2 atm.). The compns. of the liquid and vapors of 14 O<sub>2</sub>-Ar-N<sub>2</sub> mixts. were detd. and the exptl. results agreed with the calcd. values. A triangular equi. diagram was constructed. W. M. Sternberg

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Fastovskiy, V. G.

**AUTHORS:** Fastovskiy, V. G., Petrovskiy, Yu. V. 76-10-22/34

**TITLE:** A Study of the Vapor-Liquid Equilibrium in the System Nitrogen-Methane (Issledovaniye ravновesiya zhidkosti i para v sisteme azot-metan).

**PERIODICAL:** Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 10, pp. 2317-2321 (USSR)

**ABSTRACT:** The phase equilibrium of liquid and vapor in the nitrogen-methane system at absolute pressures of 2, 5, 8, 11 and 16 kg/cm<sup>2</sup> was investigated. The data concerning the equilibrium compositions of liquid and vapor and the corresponding temperatures for seven different mixtures were obtained. On the strength of the boiling temperature on the liquid composition  $T_{\text{b}}(x)$  found by experimental way the compositions of the equilibrium vapor computed which were compared to the experimental data. The fact that the computed data agree well with the experimental data admits the use of the van Laar equation with the coefficients which values are given for five pressures investigated. Data are given which facilitate the construction of the

CARD 1/2

A Study of the Vapor-Liquid Equilibrium in the System 76-10-22/34  
Nitrogen-Methane

x-y-diagrams necessary for the computation of the  
rectification device. There are 2 figures, 4 tables,  
5 Slavic references.

ASSOCIATION: Institute for Electrical Engineering imeni V.I. Lenin,  
Moscow. (Elektrotekhnicheskiy institut im. V. I. Lenina,  
Moskva)

SUBMITTED: August 18, 1956

AVAILABLE: Library of Congress

CARD 2/2

FOTIN, V.P.; AKOPYAN, A.A., red.; ANDRIANOV, K.A., red.; BIRYUKOV, V.G., glavnyy red.; BUTKEVICH, Yu.V., zamestitel' glavnogo red.; GRANOVSKIY, V.L., red.; KALITVYANSKIY, V.I., red.; KLYARFEL'D, B.N., red.; KRAPIVIN, V.K., red.; TIMOFYEV, P.V., red.; ~~PASTOVSKIY, V.G., red.~~; TSEYROV, Ye.M., red.; SHEMAYEV, A.M., red.; DEMKOV, Ye.D., red.; FRIDKIN, A.M., tekhn. red.

[Voltage increase on long a.c. lines during nonsymmetric short circuits to ground] Povysheniia napriazhenii v dlinnykh liniakh peremennogo toka pri nesimmetrichnykh korotkikh zamykaniakh na zemliu. Moskva, Gos.energ.izd-vo, 1958. 223 p. (Moscow. Vsesoiuznyi elektrotekhnicheskii institut. Trudy, no.64) (MIRA 12:2)  
(Electric lines) (Short circuits)

PHASE I BOOK EXPLOITATION

1170

Vsesoyuznyy elektrotekhnicheskiy institut

Nizkiye temperatury i redkiye gazy (Low Temperatures and Rare Gases)  
Moscow, Gosenergoizdat, 1958. 286 p. (Series: Its: Trudy, vyp. 61)  
2,260 copies printed.

Ed. (title page): Fastovskiy, V.G.; Doctor of Technical Sciences; Ed. (inside  
book): Zhigarev, A.A.; Tech. Ed.: Larionov, G. Ye. Editorial Board of Series:  
Andrianov, K.A., Biryukov, V.G. (chief ed.), Butkevich, G.V. (deputy chief ed.);  
Granovskiy, V.L., Kalitvyanskiy, V.I., Timofeyev, P.V., Fastovskiy, V.G.,  
Shemayev, A.M.

PURPOSE: This book is intended for scientists and technicians concerned with  
storing, handling, obtaining and utilizing atmospheric gases (especially oxygen  
and rare gases).

COVERAGE: The volume is one of a series published by the All-Union Electrical En-  
gineering Institute imeni V. I. Lenin. The Collection includes main projects  
carried out during the period 1947-1955 by scientists and technicians of the  
Low-temperature Laboratory headed by Doctor of Technical Sciences, Professor  
Card 1/5

Low Temperatures and Rare Gases

1170

V.G. Postovskiy, with Acting Senior Scientist, Candidate of Technical Sciences  
Yu.V. Petrovskiy, and Senior Scientist, Candidate of Technical Sciences  
A.Ye. Rovinskiy. Engineer A.A. Vlasova and Senior Technician Z.N. Kosova  
took part in the experimental work. References are given at the end of each  
article.

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Low Temperatures and Rare Gases

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105-58-3-7/31

**AUTHORS:**

Fastovskiy, V. G. , Doctor of Technical Sciences, Professor,  
Petrovskiy, Yu. V. , Candidate of Technical Sciences

**TITLE:**

On the Possibilities of Intensifying the Cooling of Turbo-  
generators (O vozmozhnosti intensifikatsii okhlazhdeniya  
turbogeneratorov)

**PERIODICAL:**

Elektrichestvo, 1958, Nr 3, pp. 32 - 35 (USSR)

**ABSTRACT:**

First a survey is given on the possible ways of intensify-  
ing the cooling of turbogenerators, then the problem of  
the usefulness of an artificial hydrogen cooling (Ref 4)  
is investigated. Of the two possible aims pursued by such  
a cooling that one is more interesting which offers the  
possibility of increasing its output in obtaining the mea-  
surements of the effective parts. This aim is investigated  
here also in application to a 200 MW turbogenerator. The  
hydrogen cooling types possible for a cooling to 0°C are  
dealt with here: the application of a compression (vapor)  
cooling plant, of an absorption cooling device, and of a  
turbodetander (?). It is shown that from the standpoint of

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AUTHORS: Fastovskiy, V.G., Doctor of Technical Sciences, 96-58-2-17/23  
Artym, R.I., Engineer and Rovinskiy, A.Ye., Candidate of  
Technical Sciences  
TITLE: The Boiling of Freon-11, Methylene Chloride and Benzene on  
a Horizontal Tube (Kipeniye freona-11, khloristogo metilena  
i benzola na gorizonta'noy trube)

PERIODICAL: Teploenergetika, 1958, 5 No 2, pp. 77 - 80 (USSR)

ABSTRACT: The boiling equipment for these tests, which is illustrated in Fig.1, consisted of a steel tube 170 mm diameter and 280 mm long, closed at the ends and enclosing a thick-walled, German-silver tube 8 mm diameter and 200 mm long, heated by electric current. The evaporated vapour was condensed and returned to the main tube. The thermal loading of the heating surface was determined from the electrical power consumed; temperatures were measured by thermocouples at appropriate places. The substances tested were chemically pure methylene chloride and nominally pure Freon-11 and benzene. Measurements of the boiling points of these liquids at atmospheric pressure showed that the Freon-11 and benzene were also comparatively pure. At the start of tests, the liquid was boiled for some hours to remove gases from it and the equipment. The heating tube surface became contaminated and was cleaned from time to time.

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The Boiling of Freon-11, Methylene Chloride and Benzene on a  
Horizontal Tube

96-58-2-17/23

In the region of well-developed boiling, the experimental data are correctly represented by the equation:

$$\alpha = Aq^n$$

which is valid when  $q$  is greater than 6 000 kcal/m<sup>2</sup>hour for CCl<sub>3</sub>F and  $q$  is greater than 12 000 kcal/m<sup>2</sup>hour for CH<sub>2</sub>Cl<sub>2</sub> and C<sub>6</sub>H<sub>6</sub>. The values of the constants in this formula are tabulated. The experimental results are also plotted in Fig.2, which clearly indicates the commencement of bubble formation. The test results in terms of the criterial relationship of Kruzhilin are graphed in Fig.3. It is noticeable that although the physical properties of Freon-11 do not differ much from those of the other liquids used, yet its heat-transfer coefficients on boiling are much higher at the same thermal loads. The article then discusses bubble formation during different phases of boiling and relates the results to the work of other authors. There are 3 figures and 11 references, 4 of which are Russian, 4 English, 2 German and 1 Japanese.

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The Boiling of Freon-11, Methylene Chloride and Benzene <sup>96-58-2-17/23</sup> on a  
Horizontal Tube

ASSOCIATION: All-Union **Electrotechnical** Institute  
(Vsesoyuznyy elektrotekhnicheskiy institut)

AVAILABLE: Library of Congress  
Card 3/3

1. Methylene chloride-Boiling
2. Benzene-Boiling
3. Freon-Boiling
4. Heating elements-Applications

SOV/96-58-8-15/22

AUTHORS: Fastovskiy, V.G. (Doctor of Technical Science) and  
Artym, R.I. (Engineer)

TITLE: An experimental Investigation of the Critical Thermal Load  
during Boiling of Binary Mixtures (Eksperimental'noye  
issledovaniye kriticheskoy teplovoy nagruzki pri kipenii  
binarnykh smesey)

PERIODICAL: Teploenergetika, 1958, <sup>5</sup>Nr 8, pp 74-78 (USSR)

ABSTRACT: This article reports an investigation of the critical thermal load at atmospheric pressure as a function of the composition for mixtures of methanol, propanol, iso-propanol, n-butanol, methylethylketone and iso-amyl alcohol in water. The experimental equipment is first described and the reasons why certain design features were chosen are explained: a schematic diagram appears in Fig 1. The tests were made on a horizontal nickel wire 0.4 mm diameter and 50 mm long. An editorial note states that because of the small size of the heating surface, the tests are not characteristic of industrial conditions. The chemicals used were chemically pure, except for the n-butanol which was of technical purity. The critical point was determined

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SOV/96-58-8-15/22

An Experimental Investigation of the Critical Thermal Load during  
Boiling of Binary Mixtures

visually and by instruments. In the majority of aqueous solutions with small amounts of organic components the wire usually burnt out when the critical condition was reached. The critical thermal load as a function of composition for the system methanol/water is plotted in Fig 2. The broken line corresponds to water alone. The maximum thermal load was obtained with a composition of 18% by weight methanol, and is double the load for water. Figs 3 and 4 display corresponding curves for iso-propanol/water and n-propanol/water. Again the results depend on the composition, and are typical for solutions of unlimited mutual solubility. Figs 5, 6 and 7 give corresponding graphs for the binary systems comprising methylethylketone/water, n-butanol/water and iso-amyl alcohol/water, which have limited mutual solubility. The limits within which single phase is not obtained are indicated in Figs 5 and 6 by vertical dotted lines. Thus in Fig 5 there are three parts of the curve; the first corresponds to a solution of methylethylketone in water, the third to a solution of

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An Experimental Investigation of the Critical Thermal Load during  
Boiling of Binary Mixtures

water in methylethylketone, whereas the second is transitional. Similar results were obtained for the system isoamyl-alcohol/water (Fig 7). The curve in Fig 6 for the system n-butanol/water is continuous because the wire was always in a solution of water in n-butanol. For all three systems there is a clearly-expressed maximum at low concentrations of the organic component in water. As the solubility of the organic component becomes less, this maximum becomes higher and occurs at lower concentrations. Thus the critical thermal loading for the system isoamyl alcohol/water, at an alcohol concentration of 0.5% weight, was three times that for water. These results are generally in line with other published work. The mechanism of the effect of small amounts of organic solvent on the critical thermal loading at which tubble boiling ceases is discussed. When the solution boils inside a nascent bubble it is mainly the low-boiling component that boils; the film of liquid enveloping the steam bubble is enriched with the high-boiling component and, therefore, boils at a higher

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SOV/06-58-8-15/22

An Experimental Investigation of the Critical Thermal Load during Boiling of Binary Mixtures

temperature than the initial composition. Curves of this temperature difference as functions of composition are given in Figs 2 - 7 inclusive. Of course, small amounts of organic liquids in water have a considerable effect on such other properties as the surface tension and the wetting angle.

There are 8 figures, 8 literature references (2 English, 3 German, 3 Soviet)

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut (All-Union Electrotechnical Institute)

1. Cyclic compounds--Thermal effects    2. Cyclic compounds--Test methods    3. Cyclic compounds--Phase studies    4. Laboratory equipment--Applications

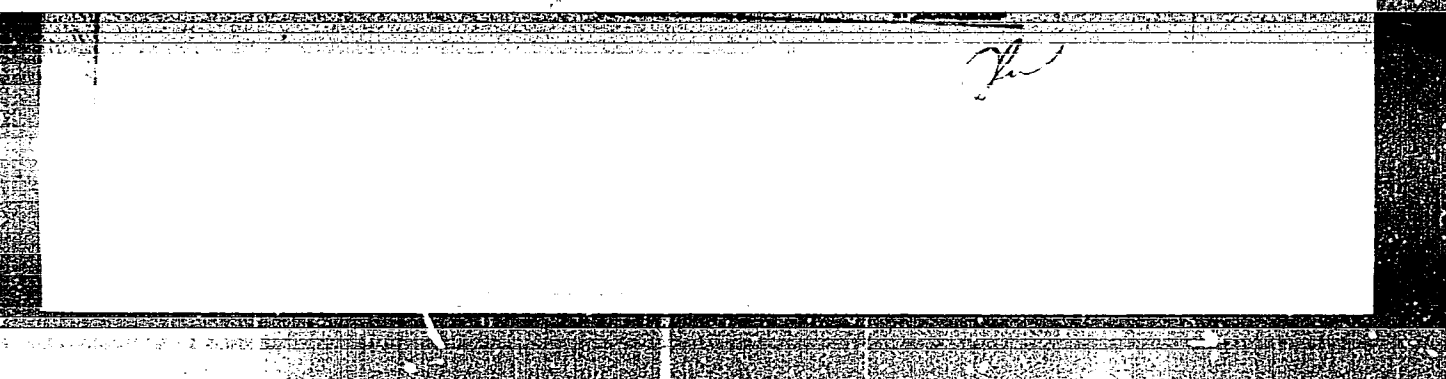
Card 4/4





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CIA-RDP86-00513R000412510002-6



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CIA-RDP86-00513R000412510002-6"

SOKOLOV, Nikolay Nikolayevich; ANDRIANOV, K.A.,red.; AKOPYAN, A.A.,red.;  
BIRYUKOV, V.G.,glavnyy red.; BUTKEVICH, G.V.,red.; GRANOVSKIY, V.L.red.;  
GERTSENBERG, G.R.,red.; ZABYRINA, K.I.,red.; KALITVYANSKIY, V.I.,red.;  
KLYARFEL'D, B.N.; SAKOVICH, A.A.; TIMOFEYEV, P.V.; PASTOVSKIY, V.G.;  
TSNYROV, Ye.M.; FRIDMAN, A.Ya.; SHUMAYEV, A.M.; TIMOKHINA, V.I.,red.

[Methods for the synthesis of organopolysiloxanes] Metody  
sintese poliorganosiloksanov. Moskva, Gos.energ. izd-vo. 1959.  
198 p. (Moscow. Vsesoiuznyi elektrotekhnicheskii institut.  
Trudy, no.66) (MIRA 12:5)

(Siloxanes)

69207

S/096/59/000/01/014/023  
E194/E484

24,5200

AUTHORS: Fastovskiy, V.G., Doctor of Technical Sciences and  
Petrovskiy, Yuriy, Candidate of Technical Sciences

TITLE: Heat Transfer and Resistance During the Flow of Air  
Between Sheets with Heavy Spherical Projections

PERIODICAL: Teploenergetika, 1959, Nr 1, pp 65-68 (USSR)

ABSTRACT: This article describes heat transfer and resistance tests on a plate type heat exchanger made of steel sheets 1 mm thick in which were stamped heavy spherical projections 8 mm diameter at 14 mm pitch both ways. The positions of the projections of the two sheets of which the heat exchanger was made were such that the projections in the one sheet came opposite the flat part of the other, as illustrated in Fig 1, so that the gas duct resembled a layer of spheres. The sheets were welded together with a space of 4 mm thick between them. The tests were made in a wind tunnel with a fan rated at 6000 m<sup>3</sup>/hr at heads up to 600 mm water. The heat exchanger was heated by steam at a pressure of 1 atm supplied in excess to avoid super-cooling of condensate and the condensate was collected. The experimental arrangements and instrumentation are

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S/096/59/000/01/014/023  
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Heat Transfer and Resistance During the Flow of Air Between Sheets  
with Heavy Spherical Projections

described. Heat transfer was studied in the range of Reynolds numbers from 3870 to 9350 corresponding to mean air speeds of 11.2 to 26.6 m/sec. The air temperature at inlet was 23.5 to 30.2°C and at outlet 86.4 to 92.3°C. The heat transfer coefficient on the air side was from 128 to 233 kcal/m<sup>2</sup> hr °C, corresponding to Nusselt values of 39 to 71. The experimental data are plotted in Fig 3 and an empirical formula, corresponding to the results, is given in Expression (1), the corresponding formula for a flat rectangular channel with smooth sides is given by Expression (2). It will be seen that for the same linear air speed the heat transfer coefficient for the sheets with heavy spherical projection is 2.5 to 2.8 times higher than for smooth plates. This increase is evidently due to increased turbulence since the increase in surface area is only 23%. The aerodynamic resistance was studied over the range of Reynolds numbers from 3050 to 15950, the loss of head ranging from 33 to 505 mm water, corresponding to Euler

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Heat Transfer and Resistance During the Flow of Air Between Sheets  
with Heavy Spherical Projections

criteria of 7.25 to 4.20. In Fig 4, the experimental data are plotted in terms of Euler's numbers as function of Reynolds Number and the corresponding empirical equation is given by Expression (3). The effectiveness of the new type of heat exchanger was compared with other types using the method recommended by Kirpichev described in Izvestiya Power Institute AS USSR, Vol 12, 1944. The comparative graph is plotted in Fig 5 and the superior performance of the new type heat exchanger is evident. The best type of heat exchanger to use depends on circumstances. It seems advisable to use a plate type heat exchanger for gas cooling when the gas is cooled by water and also for heat exchange between gas flows at different pressures when the gas at low pressure will be passed between the hemispherical sheets and the gas at higher pressure over the outsides. Heat exchangers of the type described are of simple construction and various metals may be

Card 3/4

3Q(4).

AUTHORS:

Pastovskiy, V. G., Petrovskiy, Yu. V., SOV/64-59-2-15/23  
Akohurin, R. A.

TITLE:

Investigations of the Resistance and Efficiency of a  
Contact-plate Utilizing the Kinetic Energy of the Light  
Phase (Issledovaniye soprotivleniya i effektivnosti  
deystviya kontaktnoy tarelki, ispol'zuyushchey  
kineticheskuyu energiyu legkoy fazy)

PERIODICAL:

Khimicheskaya promyshlennost', 1959, Nr 2, pp 169-174 (USSR)

ABSTRACT:

No constructional and individual data are available on the  
contact-plates devised by V. Kittel (Ref 1) which operate  
according to the principle of the utilization of kinetic  
energy of the rising light phase for a more intense mixing.  
In the present case contact-plates were constructed by  
employing the same principle. The plates were made of  
0.5 mm steel plates with a certain arrangement of elliptic  
openings (Figs 1, 2). The total surface of the openings  
is 27% of the surface of the plate. Two types of plates  
were produced which are used in pairs. In one plate the  
liquid flows from the middle to the periphery, in the second

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Investigations of the Resistance and Efficiency of a SOV/64-59-2-15/23  
Contact-plate Utilizing the Kinetic Energy of the Light Phase

it flows reversely. Two pairs of plates were tested on a test plant (Fig 3). Oxygen was desorbed from water (at an air current velocity of 1710-5000 kg/m<sup>2</sup>/hour, wetting density of 18800-40300 kg/m<sup>2</sup>/hour, and water temperature of 100°) and carbon dioxide from water (1855-4950 kg/m<sup>2</sup>/hour, 25500-42250 kg/m<sup>2</sup>/hour and 110). The resistance of the plates described is lower by 2-3 times than that of perforated or bubble plates. The optimum velocity of the gas flow (at the above-mentioned wetting densities) is 0.9-1.0 m/sec. Under the afore-mentioned conditions a value  $E_{ML} = 0.82-0.88$  for the

degree of efficiency according to Merfri with respect to the change in the liquid composition was found. Compared to the perforated and bubble plates the efficiency of the contact-plates described is higher, the resistance is lower and the degree of efficiency under optimum condition is equal. There are 9 figures and 13 references, 3 of which are Soviet.

Card 2/2



FASTOVSKIY, V. G.

S/064/60/000/004/003/006  
B015/B060

AUTHORS: Fastovskiy, V. G., Rovinskiy, A. Ye.  
TITLE: Adsorption Method of Separating a Krypton - Xenon Mixture  
PERIODICAL: Khimicheskaya promyshlennost', 1960, No. 4, pp. 41-46

TEXT: The authors worked out an adsorption method of separating a krypton - xenon mixture on an industrial scale. Experiments on the adsorption of the individual gases were conducted by means of a device and a method used in previous experiments with АГ -2 (AG-2) coal (Ref. 2). They showed the similarity in the adsorption capacity of the two coal types AG-2 and АГ -3 (AG-3) with respect to Kr and X, and the adsorbed amount can thus be calculated from the same interpolation equations. The adsorption of the xenon - krypton mixture was tested on an appropriate plant (Fig. 3), and it was found (Table 1, Figs. 4, 5) that a 75-80% xenon concentration was attained at -60°C and a total pressure of 760 torr with a single adsorption in equilibrium. The fact is that the adsorption of krypton is strongly suppressed in the presence of xenon. ✓

Card 1/2

PASTOVSKIY, V.G.; ROVINSKIY, A.Ye.

Adsorption method for separating a krypton - xenon mixture.  
Khim.prom. no.4:305-310 Je '60. (MIRA 13:8)  
(Krypton) (Xenon) (Adsorption)

69204

S/096/60/000/06/015/025  
E194/E284

24,5200

AUTHORS: Fastovskiy, V. G., Doctor of Technical Sciences and  
Petrovskiy, Yu. V., Candidate of Technical Sciences

TITLE: Heat Transfer and Resistance of Bundles of Tubes with  
Continuous Spiral Ribbing in Square Arrangement

PERIODICAL: Teploenergetika, 1960, <sup>7</sup>Nr 6, pp 69-72 (USSR)

ABSTRACT: Since the manufacture of tubes with continuous spiral  
ribbing was developed by TsNIITMASH they have come to  
be used in heat exchangers. A study was made of the  
heat transfer and resistance of bundles of aluminium  
and copper tubes in square arrangement using the  
experimental equipment and procedure described in an  
article by the same authors in Teploenergetika, 1959,  
Nr 1. In the tests steam was passed through the tubes  
and air blown over the outside. The main cooler design  
data and experimental results are tabulated and the  
empirical formula (1) is recommended to represent the  
experimental results. The aluminium tubes gave a 10%  
higher heat transfer coefficient than the copper tubes  
apparently because they were more freely spaced in the  
bundle and the relative height of ribbing is less. The

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Heat Transfer and Resistance of Bundles of Tubes with Continuous  
Spiral Ribbing in Square Arrangement

experimental results for resistance are well represented by expression (2). Tests made by other authors are in good agreement with the present ones and indicate the high efficiency of these ribbed tubes. It is calculated that the bundle of aluminium tubes is 2.8 times lighter, 30% less in volume, 53% less in section, and 15% less in depth than the most successful bundle of tubes with wire ribbing described in an article by Tulin in Teploenergetika, 1958, Nr 3. There are 1 table and 7 references, 4 of which are Soviet and 3 English. ✓

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut (All-Union  
Institute for Electrical Engineering)

Card 2/2

S/080/60/033/007/016/020  
A003/A001AUTHORS: Fastovskiy, V. G., Rovinskiy, A. Ye.TITLE: The Adsorption of Hydrocarbon Gases and Their Mixtures

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol. 33, No. 7, pp. 1641-1653

TEXT: The separation of mixtures of hydrocarbon gases in order to obtain pure ethylene, propylene, etc. is one of the most important problems of modern chemical technology. The adsorption method is especially effective for separating mixtures of light hydrocarbons. The methods for calculating adsorption separation columns are insufficiently developed. The data for such calculations are incomplete. The isotherms of the adsorption of  $\text{CH}_4$ ,  $\text{C}_2\text{H}_2$ ,  $\text{C}_2\text{H}_4$ ,  $\text{C}_2\text{H}_6$  and  $\text{C}_3\text{H}_6$  at  $0-20^\circ\text{C}$  and  $\text{C}_3\text{H}_8$  at  $0-80^\circ\text{C}$  on  $\text{Al}^-3$  (AG-3) activated coal and also  $\text{CH}_4$ ,  $\text{C}_2\text{H}_2$  and  $\text{C}_2\text{H}_6$  at  $20^\circ\text{C}$  on KCM(KSM) silicagel at pressures of  $p < 760$  mm Hg are satisfactorily expressed by the potential theory of adsorption; the data for each adsorbent can be correlated by a universal characteristic curve (equation 2) or by a universal isotherm (equation 3). The values of the relative adsorption volatility for the mixtures investigated are constant in the whole range of the content of components, and the sum of the values of the

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S/080/60/033/007/016/020  
A003/A001

## The Adsorption of Hydrocarbon Gases and Their Mixtures

relative adsorption of the components is in all cases close to unity (equation 5). This circumstance makes it possible to obtain the system of equations (6) and (7), by means of which the equilibrium composition of the adsorbed phase and the adsorbed volumes of the mixture components can be calculated. The relative adsorption volatility of the  $C_2H_4$  -  $C_2H_6$  mixture in the case of adsorption on silicagel is 3 times greater than in the adsorption on coal. The efficiency of silicagel in the treatment of gas is lower, but it is more efficient for separating mixtures of such a type than coal. Z. N. Kosova helped in carrying out the measurements. There are 11 graphs, 1 diagram, 2 tables and 8 references: 4 Soviet, 3 English and 1 American.

SUBMITTED: February 16, 1959

Card 2/2

S/064/61/000/009/002/002  
B110/B101

AUTHORS: Petrovskiy, Yu. V., Fastovskiy, V. G., Royzen, I. I.

TITLE: Use of finned pipes in crosscurrent exchangers with spirals

PERIODICAL: Khimicheskaya promyshlennost', no. 9, 1961, 58 - 63

TEXT: The present paper deals with heat exchange, hydraulic resistance, and efficiency of finned pipes in heat exchangers used for air fractionation. The authors used tempered copper pipes, 8 - 15 mm in diameter, with transverse fins arranged in spirals, which were obtained by plastic deformation by means of rolling. Rolling rate: 15 - 20 m/hr; pipe length: 20 m; inside diameter  $d_i$ : 4.7 mm; diameter of fin basis: 6.1 mm;

outside fin diameter:  $D = 10.7$  mm; mean fin thickness:  $\delta = 0.38$  mm; fin height:  $h = 2.3$  mm; number of fins per meter: 625; fin spacing:  $t = 1.6$  mm; specific external pipe surface:  $F = 0.0965$  m<sup>2</sup>/m; coefficient for calculating the surface of the finned pipe:  $\xi = F/F_{(sm.p.)} = 5.05$ ; ( $F_{sm.p.}$  = specific surface of smooth pipe, diameter = 6.1 mm); weight of pipe:  $W = 0.215$  kg/m. The tempered pipe can be wound round a 40 - 50 mm

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S/064/61/000/009/002/002  
B110/B101

Use of finned pipes in...

diameter core and serves for high-pressure heat exchangers ( $150-200 \text{ kg/cm}^2$ ) (admissible internal excess pressure =  $400 \text{ kg/cm}^2$ ). The pipes (2) were wound round a brass pipe core (1) (Fig. 2) with an outside diameter of 100 mm, in four layers without space linings. The sense of winding alternated. Number of turns in the direction of the air current: 24 per layer; interstice  $\approx 11.2 \text{ mm}$ ; space between fin edges: 0.5 mm. They are covered with felt (3) and coated with a 1 mm Cu foil (4). Four guiding surfaces provide good air distribution. The heat exchanger is 900 mm long, its outside diameter is 195 mm. The total length of pipes is 43.4 m, their external surface:  $4.18 \text{ m}^2$ . A high-pressure fan (1) (Fig. 3) and an electric heater (2) are used for pumping air into the heat exchanger (3) from which cooled air is conducted through a pipe (4) (100 mm in diameter) with a diaphragm (5), a differential pressure gauge (6), and a simple water gauge (7) for measuring air consumption. A centrifugal pump (9) served for pumping cold water through an intermediate vessel (8) into vessel (3), and warm water into measuring vessel (10). (11) and (12) are differential water gauges. (11) indicates the drop in pressure of the air passing through (3), (12) indicates the pressure difference between inlet and outlet pipes of (3). Inlet and outlet temperatures were measured by the copper-

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Use of finned pipes in...

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B110/B101

constantan thermocouples  $T_1$  and  $T_2$ , the temperature of water by  $T_3$  and  $T_4$ . The differential thermocouple  $T_5 - T_5'$  determined the difference in the temperatures of  $H_2O$  and air in the lower part of (3). The Hg thermometer  $T_6$  measured the air temperature behind (5). The consumption of air and water was controlled and periodically measured by sluice valves inserted into suction and pressure pipes, and by valves between (8) and (9), respectively. The exchanged heat amount  $Q$  was determined from temperature, water and air consumption. Heat exchange coefficient of the finned surface:  $\alpha = 0.133 \lambda (W \cdot d_{out}/\nu)^{0.89} / d_{out}$ ;  $\lambda$  = thermal conductivity of air;  $d_{out}$  = outside diameter of pipe;  $W$  = velocity of air flow;  $\nu$  = kinematic viscosity; pressure drop:  $\Delta p = 10 m (\gamma \cdot W^2) g Re^{-0.27}$ , where  $m$  is the number of turns in the direction of air flow, and  $\gamma$  is the air density. In liquid and high-pressure heat exchangers, the reduction of weight is 65 - 70% due to the use of the above pipes. In medium-pressure gas heat exchangers it is 53 - 58% (saving general t of Cu per oxygen plant). It would be better to use 10.1.5 mm pipes for the latter, and 12.2 mm pipes for undercooling

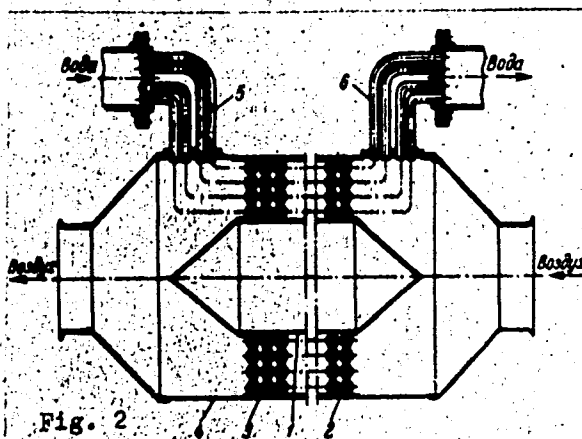
Card 3/5

S/064/61/000/009/002/002  
B110/B101

Use of finned pipes in...

systems.  $Nu = 0.093 \cdot Re^{0.89}$  holds for pipes with  $D = 13$  mm, and  
 $Nu = 0.148 \cdot Re^{0.89}$  holds for pipes with  $D = 18$  mm. The number of pipes used in  
gas heat exchangers and liquid undercoolers can be reduced to 30-40%, and  
their weight to 35-50%. There are 3 figures, 3 tables, and 4 Soviet  
references.

Fig. 2: Test heat exchanger.



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KAGAN, A.M.; FASTOVSKIY, V.G.; ROVINSKIY, A.Ye.

Heat transfer from a fluidized bed of solid particles to the coil  
pipe surface. Khim.prom. no.11:790-793 N '61. (MIRA 15:1)  
(Fluidization) (Heat—Transmission)

PETROVSKIY, Yu. V., kand.tekhn.nauk; FASTOVSKIY, V.G., doktor tekhn.nauk, prof.

Study of heat transfer and resistance to the flow of oil through  
a canal in the steel of a turbogenerator stator. Vest. elektroprom.  
32 no.6:16-22 Je '61. (MIRA 16:7)  
(Turbogenerators Cooling)

PETROVSKIY, Yu.V.; FASTOVSKIY, V.G.; RUSANOV, A.A., red.; LARIONOV,  
G.Ye., tekhn. red.

[Efficient modern heat exchangers]. Sovremennye effektivnye  
teplobmenniki. Moskva, Gos. energ. izd-vo, 1962. 255 p.  
(Moscow. Vsesoiuznyi elektrotekhnicheskii institut. Trudy,  
no.70). (MIRA 15:7)

(Heat exchangers)

S/096/62/000/003/007/008  
E194/E455

21.5200

AUTHORS: Gertsovskiy, V.A., Engineer; ~~Fastovskiy, V.G.~~, Doctor  
of Technical Sciences, Professor;  
Rovinskiy, A.Ye., Candidate of Technical Sciences

TITLE: Heat transfer during laminar unstabilized flow of  
viscous fluid in a short annular duct

PERIODICAL: Teploenergetika, no.3, 1962, 68-70

TEXT: Heat exchange often occurs in equipment with short ducts,  
for example in transformers with concentric layer windings and  
forced oil cooling and also in recent designs of heat exchanger.  
Because of numerous discontinuities in the heat exchange surfaces,  
heat transfer takes place over the entire length under hydro-  
dynamically and thermally unstable conditions. A brief review of  
previous work on this subject, particularly theoretical, is given.  
In the present experimental work mean values of heat transfer  
coefficient were determined whilst a viscous fluid (transformer  
oil) was flowing in a short annular duct with flow conditions that  
were hydrodynamically and thermally unstable. The experimental  
equipment is described. Oil at known temperature and flow rate  
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Heat transfer during laminar ...

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E194/E455

is passed through the test devices in which the cylinder walls are electrically heated. Four variants of duct were used with different cylinder diameter ratios ( $d_2/d_1$ ), different equivalent duct diameters  $d_3$  and lengths  $l$ . Particular care was taken to prevent heat losses, which can be very severe in short models. The errors are estimated and considered reasonable. The tests covered Reynolds numbers in the range 202 to 2170 and Nusselt numbers in the range 40 to 210. The results are found to lie close to a line corresponding to the following equation

$$Nu = 0.17 Re^{0.5} + 0.7 d_3 / l \left( Pr \frac{d_2}{d_1} \frac{l}{d_3} \right)^{1/3} .$$

Values of Nu were also calculated by the method of E. Pohlhausen (Ref.7: Ztschr. angew. Mat., Mech., Bd. 1, S.115-121, 1921): the greatest difference between the calculated and experimental values of Nu were  $\pm 19\%$ , and the mean error of the empirical equation  $\pm 15\%$ . The intensity of heat transfer in an annular duct heated from one side depends entirely on the properties of the

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Heat transfer during laminar ...

S/096/62/000/003/007/008  
E194/E455

fluid, its conditions of flow and the duct geometry. The conditions of heating (constant heat input or constant temperature) and the presence of very rough duct walls have no appreciable influence on the rate of heat transfer. There are 3 figures, 2 tables and 8 references: 4 Soviet-bloc and 4 non-Soviet-bloc.

ASSOCIATION: Vsesoyuznyy elektrotekhnicheskiy institut  
(All-Union Electrotechnical Institute)

Card 3/3

X



PETROVSKIY, Yu.V.; FASTOVSKIY, V.G.; ROYZEN, L.I.

Heat transfer and hydraulic resistance during the lengthwise  
flow of gas around transverse fin tubes. Khim.prom. no.6:433-438  
Je '62. (MIRA 15:11)  
(Pipe--Hydrodynamics) (Heat--Transmission)

FASTOVSKIY, V.G., doktor tekhn. nauk, prof.; ROVINSKIY, A.Ye.;  
PETROVSKIY, Yu.V.; PANASENKOVA, Ye.I., red.

[Inert gases] Inertnye gazy. Moskva, Atomizdat, 1964.  
302 p. (MIRA 17:12)

PETROVSKIY, Yu.V.; PASTOVSKIY, V.G.; GERTSOVSKIY, V.A.

Plate-contact apparatus for the rectification and fractional  
condensation of binary mixtures. Khim. prom. 40 no.10:741-  
746 O '64. (MIRA 18:3)

L 300 7-64 3WT(m)/EPF(c)/EPF(n)-2/EWP(t)/T/EPR/EWP(b) Fr-1 Ps-1

ACCESSION NR: AP5005564

S/0080/65/038/002/0328/0335

AUTHOR: Kovinskiy, A. Ye.; Fastovskiy, V. G.; Kosova, Z. N.

TITLE: Adsorption of rare gases and their accompanying gases synthetic zeolites

SOURCE: Zhurnal prikladnoy khimii, v. 38, no. 2, 1965, 328-335

TOPIC TAGS: synthetic zeolite, rare gas, gas chromatography, gas adsorption, argon purification, adsorption isotherm, molecular sieve

ABSTRACT: The adsorption of helium, neon, argon, krypton, xenon, nitrogen, and oxygen was studied at temperatures corresponding to commercial conditions with synthetic zeolites and a technique and pilot apparatus were developed for separating argon-oxygen mixtures by a method originally proposed by Jones (Am. Pat. 2810545; 10, 22, 1957). The study covered granulated type NaA and CaA zeolites from the Groznenskiy neftyanny institut (Groznyy petroleum institute) and molecular sieve type 4A used originally for the oxygen-argon separation. A gravimetric type adsorption was used for measuring the adsorption isotherms of rare gases and for the pilot tests with argon-oxygen and argon-oxygen-nitrogen model mixtures, and a pilot adsorber permitting the alternate flow of gas through columns and the thermal regeneration of adsorbent was employed for the pilot tests. Adsorption of

Card 1/2

L 3265F-65

ACCESSION NR: AP5005564

approximately 5-10% oxygen from its mixtures with argon at 90K on zeolite type NaA showed the possible purification of argon to a level of 0.004 vol% O<sub>2</sub>. The purification decreased slightly with a reduction in contact time. Admixture of nitrogen suppressed the oxygen adsorption. Zeolite CaA was shown to be applicable for separating neon-helium mixtures at 78K, the adsorption of neon being higher and that of helium lower than on activated charcoal Ag-2. The technological advantages of separating argon-oxygen with the described apparatus are outlined. Orig. art. has: 8 figures and 2 tables.

ASSOCIATION: None

SUBMITTED: 04Feb63

ENCL: 00

SUB CODE: IC

NO REF SOV: 004

OTHER: 006

Card 2/2

NADOL'NIKOV, A.G.; FASTOVSKIY, V.G.; PETROVSKIY, Yu.V.

Miniature refrigerating machine. Prib. i tekhn. okop. 8 no.6;  
188-190 N-D '63. (MIRA 17:6)

1. Vsesoyuznyy elektrotekhnicheskiy institut.

NOSKOV, I.G., kand.sel'skokhoz.nauk (Tashkent); PONOMARENKO, G.Ya.;  
ZAKRIVIDOROGA, S.P.; ZAKRIVIDOROGA, Z.S.; LIPSITS, D.V.;  
LYUBOVSKAYA, P.I.; POLOTAY, V.A.; TARAKHOVSKIY, M.L.;  
FASTOVSKIY, V.I.

Letters to the editor. Zashch. rast. ot vred. i bol. 6  
no.8:10 Ag '61. (MIRA 15:12)

1. Vsesoyuznaya stantsiya po raku kartofelya Vsesoyuznogo  
instituta zashchity rasteniy i Chernovitskiy meditsinskiy  
institut.

(Plants, Protection of)  
(Synchytrium—Toxicology)

FASTOVSKIY, V.L. (Chernovitsy, ul. Klary TSetkin, d.9, kv.2)

Primary cancer of the appendix vermiformis associated with  
peritoneal carcinomatosis. Nov.khir.arkh. no.4:66-67 J1-Ag '57.  
(MIRA 10:11)

1. Kafedra patologicheskoy anatomii (zav. - doktor med. nauk  
N.M.Shinkorman) Chernovitskogo meditsinskogo instituta.  
(APPENDIX (ANATOMY)--CANCER)  
(PERITONEUM--CANCER)



PASTOVSKIY, V.L.

A case of endocarditis lenta with isolated affection of the valves  
of the pulmonary artery in patent ductus arteriosus. Vrach.delo  
no.1:1313-1314 D '58. (MIRA 12:3)

1. Prosektura (sav. - prof. N.M. Shinkerman) Chernovitskoy oblastnoy  
klinicheskoy bol'nitsy.

(ENDOCARDITIS)

(PULMONARY ARTERY--DISEASES)

PASTOVSKIY, V.L.

Repeated paradoxical thromboembolism with obturation of the  
fenestra ovalis. Vrach.delo no.2:189-191 F '60. (MIRA 13:6)

1. Kafedra patologicheskoy anatomii (sav. - prof. N.M. Shinkerman)  
Chernovitskogo meditsinskogo instituta.  
(EAR--DISEASES) (EMBOLISM)

FASTOVSKIY, V.L.

Case of ulcerative cystitis complicated by perforation of the  
urinary bladder. Urologiia 25 no.2:54-55 Mr-Apr '60.

(MIRA 13:12)

(BLADDER--DISEASES)

TARAKHOVSKIY, M.L.; FASTOVSKIY, V.L.

Pharmacotherapy and pathological anatomy of experimental hypertension  
Vrach.delo no.5:489-493 My '60. (MIRA 13:11)

1. Kafedra farmakologii (zav. - prof. S.P.Zakrividoroga) i kafedra  
patologicheskoy anatomii (zav. - prof. N.M.Shinkerman) Chernovitskogo  
meditsinskogo instituta.

(HYPERTENSION)

(AUTONOMIC DRUGS)

ZAKRIVIDOROGA, S.P.; ZAKRIVIDOROGA, Z.S.; LIPSITS, D.V.; LYUBOVSKAYA, P.I.;  
POLOTAY, V.A.; TARAKHOVSKIY, M.L.; FASTOVSKIY, V.L.

Toxicity for animals of the cancerous potato. Vop. pit. 21 no.5:  
58-66 S-0 '62. (MIRA 17:5)

1. Iz laboratorii biokhimii Vsesoyuznoy nauchno-issledovatel'skoy  
stantsii po paku kartofelya i kafedr farmakologii, patofiziologii,  
patoanatomii i gistologii meditsinskogo instituta, Chervovtsy.

FASTOVSKIY, V.L. (Chernovtsy)

Role of the thebesian vessels in the compensation mechanisms  
of cardiac insufficiency. Vrach.delo no.3:81-83 Mr '63.

(MIRA 16:4)

1. Kafedra patologicheskoy anatomii (zav. - prof. N.M.  
Shinkerman) meditsinskogo instituta i pervaya gorodskaya  
bol'nitsa.

(CARDIAC VEIN)

(HEART—DISEASES)

PASTOVSKIY, V.L. (Chernovitsy)

Functional and anatomical characteristics of the thebesian vessels  
in the normal and hypertrophic heart. Arkh. pat. 26 no.9:24-30 '64.  
(MIRA 18:4)

1. Kafedra patologicheskoy anatomii (zav. - prof. N.M.Shinkerman)  
Chernovitskogo meditsinskogo instituta i Chernovitskaya l-ya  
gorodskaya klinicheskaya bol'nitsa (glavnyy vrach L.F.Kimlach).

FASTOVSKIY, V.L. (Chernovtsy, ul. Klary TSetkin, 9, kv.2)

Thebesian vessels in the hypertrophied heart. Arkh. anat., gist.  
i embr. 47 no.8:96-102 Ag '64. (MIRA 18:4)

1. Kafedra patologicheskoy anatomii (zav. - prof. N.M.Shinkerman)  
Chernovitskogo meditsinskogo instituta i Chernovitskaya 1-ya  
gorodskaya bol'nitsa.



DETINKO, F.M., inzh.; FASTOVSKIY, V.M., inzh.

Calculation of annular components with consideration of radial  
axisymmetrical loads. Vest. elektrom 34 no.6:73-77 Je '63.  
(MIRA 16:7)

(Electric machinery)

DETINKO, F.M., inzh.; FASOVSKIY, V.M., inzh.

Mechanical calculation of the pole coil of a synchronous  
machine. Elektrotehnika 35 no.6:42-43 Je '64.

(MIRA 17:8)

PETROVSKIY, Yu.V., kand.tekhn.nauk; FASTOVSKIY, V.P., doktor khim.nauk,  
prof.; ROYZEN, L.I., inzh. ~~\_\_\_\_\_~~

Possibility for the use of plate-type finned heat exchangers in  
air-fractionating apparatus. Khim.mashinostr. no.5:8-12 S-0  
'63. (MIRA 16:10)

FASTOVSKIY, Ya. A. Cand Med Sci -- (diss) "X-ray diagrams<sup>(98)</sup> of diseases of the labyrinth of the ethmoid." Mos. 1958. 11 pp (Min of Health RSFSR. Mos Med Stomatological Inst), 200 copies (KL, 14-58, 118)

NEVSKIY, B.N.; PASTOVSKIY, Ya.A., kand. med. nauk

Possibilities of early X-ray diagnosis of lesions of the  
cervical portion of the esophagus caused by foreign bodies.  
Vest. rent. 1 rad. 38 no.6:45-48 N-D '63.

(MIRA 17:6)

1. Iz rentgenovskogo otdeleniya (zav.- prof. G.M. Zemtsov)  
Gosudarstvennogo nauchno-issledovatel'skogo instituta ucha,  
gorla, i nosa (direktor - prof. N.A. Bobrovskiy) Ministerstva  
zdravookhraneniya RSFSR.

FASTR, Pavel, dr.

One year since the law on highways went into effect. Sil doprava  
10 no.12:15 D '62.

FASTB, Pavel, dr.

New organization of highway transportation and highway management. Doprava no.3:196-199 '63.

FASTR, Pavel, dr.

With full energy into the New Year. Siln doprava 13 no.1:2-3  
Ja '65.



S/193/61/000/001/008/008  
A005/A001

AUTHORS: Grigulis, Yu.K., Fastritskiy, V.S.

TITLE: The Universal Device УП -3М (UP-3M) for Checking the Thicknesses of Coverings and Properties of Surface Layers

PERIODICAL: Byul. tekhn.-ekon. inform., 1961, No. 1, pp. 42-44

TEXT: The Laboratoriya avtomatizatsii proizvodstvennykh protsessov (Laboratory for Automation of Production Processes) of the Institut mashinovedeniya AN Latviyskoy SSR (Institute of Science of Machines at the Academy of Sciences of the Latviyskaya SSR) developed a high-frequency device UP-3M for measuring the thicknesses of arbitrary coverings on arbitrary base materials under the condition that their electrical conductivities or the magnetic permeabilities differ by at least a few percent. The high sensitivity of the device permits also the measurement of surface layer properties of components or their coatings over a very wide range: the electric conductivity, the magnetic permeability, the homogeneity degree of the chemical composition and the thermal treatment, the porosity, the surface fineness, the presence and magnitude of surface cracks, the amplitudes and frequencies of the vibrations of mechanical components. The operation principle of the device

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8/193/61/000/001/008/008  
A005/A001

The Universal Device УП-3М (UP-3M) for Checking the Thicknesses of Coverings and Properties of Surface Layers

is as follows: a high-frequency electromagnetic flux of an emitter induces in the surface layer of the component eddy currents causing energy losses and an electromagnetic counter-flux; the magnitude of losses and electromagnetic counter-flux depends on the electromagnetic properties of the surface layer or on the distance between the emitter and the component. The device consists of the following units: supply with electronic stabilizer, h.f. generator, measuring device with emitter, amplifier, and indicator. The supply unit includes the transformer, two semiconductor bridge rectifiers, the electronic stabilizer made up of valves and a stabilivolt; the filament voltage is stabilized by a barreter. The generator has two circuits with electron coupling (so called Schembel generator with series connection of the circuits) having high frequency stability within wide limits independent of the load variability. The measuring unit is a T-shaped overlapping bridge whose responsive element is the special transducer in the form of a coil placed in a specially shaped ferrite concentrator. The bridge is adjustable by a capacitance selector, a variable capacitor, resistance selector, and potentiometer. The bridge input voltage is 1.4-1.6 v independent of the balancing degree. The bridge

Card 2/4

S/193/61/000/001/008/008  
A005/A001

The Universal Device УН -3М (УП-3М) for Checking the Thicknesses of Coverings and Properties of Surface Layers

output voltage is fed into the resonance amplifier input through a resistance, a potentiometer, and a separation capacitor. The resonance amplifier permits the separation of the fundamental harmonic. The resistance serves for the widening of the pass band. The amplification factor of the amplifier is 100. The indicator unit consists of the detector and the d.c. amplifier with a microammeter in its anode circuit. The measurement can be carried out by both methods of unbalance and two parameters. In the former case, the device is balanced and tuned with the transducer on the standard basis. For measuring different coverings on steel and nonmagnetic metals or the thicknesses of different foils applied to a nonconductive base, calibration graphs are added to the device; if the electromagnetic properties of the base and covering materials differ sharply, it is convenient to perform the measurement with the transducer removed from the component by a few millimeters. The measuring method of two parameters is based on the possibility of direct fixing of the changes of the active and induced transducer resistance, if the transducer is contacted with specimens of different materials, with different covering or different finish degree; for these measurements special diagrams must be plotted. This method makes it possible to measure simultaneously two parameters

Card 3/4

S/193/61/000/001/008/008  
A005/A001

The Universal Device UP-3M (UP-3M) for Checking the Thicknesses of Coverings and Properties of Surface Layers

of a covering or a surface layer, for instance, electric conductivity and magnetic permeability, or the thickness of the covering or the surface layer and its electric conductivity. The sensitivity of the device to variations of the environmental temperature is a disadvantage, which requires additional balancing at an environmental temperature exceeding 40°C, whereby the sensitivity of the device does not change. Moreover, when using manganese-zinc ferrites for the transducer concentrator, the transducer parameters become generally better, and the influence of the environmental temperature considerably decreases. The manufacture of a lot of 500 pieces of the device UP-3M is included into the plan for 1961 according to the resolution of the Nauchno-tehnicheskii komitet i sovnarkhoz Latviyskoy SSR (Scientific-Technical Committee and Sovnarkhoz of the Latviyskaya SSR). There is 1 photograph.

Card 4/4

L 8316-66 EWT(d)/EWT(m)/ENP(c)/ENP(v)/T/ENP(t)/ENP(k)/ENP(z)/ENP(b)/ENP(l)

ACC NR. AT5027509

SOURCE CODE: UR/3171/64/015/000/0221/0226

IJP(o)/ JD/WW/HW

AUTHOR: Eastritskiy, V. S.; Belevitnev, V. R.

ORG: Polytechnic Institute, Riga (Politekhicheskiy institut)

TITLE: Nondestructive control of double-layer coatings

SOURCE: Riga. Politekhicheskiy institut. Uchenyye zapiski, v. 15, 1964. Avtomatizatsiya proizvodstvennykh protsessov v mashinostroyeni i priborostroyeni (Automation of production processes in machinery and instrument manufacture), no. 3, 221-226

TOPIC TAGS: specialized coating, measuring instrument, nickel, cobalt, copper, metal deposition

ABSTRACT: Devices for nondestructive control of galvanic coatings are not sufficiently perfected yet although there exist setups utilizing eddy currents which seem quite promising for single-layer control. The possibility of simultaneous control of double layer has been mentioned in the literature but in practice such measurements have not yet been attempted. The present authors analyze the UP-3M device developed by the Institute of Automation and Mechanics, AN LatvSSR (Institut avtomatiki i mekhaniki AN LatvSSR) with the aim of extending its usefulness to double-layer control. The device contains a generator, a T-shaped bridge, a cathode follower, a resonant amplifier, a detector, a DC amplifier, and an electronically stabilized power supply. The weakest links in the operating chain were the bridge and the AC

Card 1/2

L 8316-66

ACC NR: AT5027509

amplifier. The article describes in detail the modifications introduced into these units which made the device capable of measuring NiCo 4.5  $\mu$  coatings deposited on top of a 17  $\mu$  copper substratum. It is noted in conclusion that the modifications described may be accomplished on existing devices without substantial structural alterations. Orig. art. has: 2 formulas and 5 figures.

SUB CODE: MM, IE, EE / SUBM DATE: 00 / ORIG REF: 007

CC  
Card 2/2

KIFER, I.I.; FASTRITSKIY, V.S.; MIRMAN, B.A.

Calculating the resistance of a coil located above an electroconductive ferromagnetic half space. Defektoskopiia 1 no.3:62-70 '65.

(MIRA 18:8)

1. Rizhskiy politekhnicheskii institut.

KIFER, I.I.; FASTRITSKIY, V.S.

Selecting operating conditions of a superposed transducer  
placed above a ferromagnetic half space. Defektoskopiya 1  
no.4:32-37 '65. (MIRA 18:12)

1. Rzhskiy politekhnicheskij institut.



L 27647-66 EWP(c)/EWP(k)/EWT(d)/EWP(h)/ETC(m)-6/EWP(l)/EWP(v)

ACC NR: AP6018519

SOURCE CODE: UR/0381/65/000/006/0015/0023

57  
B

AUTHOR: Kifer, I. I.; Fastritskiy, V. S.

ORG: Riga Polytechnic Institute (Rizhskiy politekhnicheskiy institut)

TITLE: Designing applied transducers with ferrite cores

SOURCE: Defektoskopiya, no. 6, 1965, 15-23

TOPIC TAGS: ferrite, ferromagnetic material, magnetic permeability

ABSTRACT: On the basis of solution of the problem on the induced resistance of a coil (without a core) interacting with a part of an article made of ferromagnetic material, the designing of applied coils with two types of ferrite cores is examined.

As a result of the work conducted it was possible to obtain an approximate method of designing applied transducers with two of most widely known types of ferrite cores, using the earlier developed method of designing coils without core. By determining, experimentally or analytically, the permeability of their shape, this method can be used for other shapes and sizes of cores. Preliminary data allows one to consider that the proposed method can be used even during designing of coils designated for inspecting articles made from non-ferromagnetic materials. Orig. art. has: 3 figures, 4 tables and 20 formulas. [JPRS]

SUB CODE: 20 / SUBM DATE: 08Oct65 / ORIG REF: 008 / OTH REF: 001

Card 1/1 CC

UDC: 620.179.14

FASTROVA, J.  
GA

15

The chemical composition of soil from lake bottoms in Tichobáň compared to the natural increment of fish Antonin Němec and Jarmila Fastrová. *Škvrňák Časopis Akad. Zemědělské* 17, 84-77(1942). Soil specimens collected to a depth of 20 cm. from 12 fish ponds as well as water specimens from the soil specimen locality were analyzed for total and sol. N, exchangeable acidity, pH, K<sub>2</sub>O, CaO, MgO, P<sub>2</sub>O<sub>5</sub>, Fe<sub>2</sub>O<sub>3</sub>, ZnO, CuO, Al<sub>2</sub>O<sub>3</sub> and Mn<sub>2</sub>O<sub>3</sub> (acid. by 1% citric acid). From the table of analysis it is evident that in soils from the fish pond bottoms contg. more than 1500 mg. CaO per kg. of soil, the increment of fish depends upon water-sol. K present in the soil except when the bottom is covered by a heavy vegetation which absorbs the sol. K and sometimes contains 3% K in its ash. In soils contg. less than 1500 mg. CaO per kg. the increment of fish was tiny in spite of the fact that the soil was supplied with an abundance of sol. K (20-250 mg.) and P<sub>2</sub>O<sub>5</sub>. The fish failed to increase in the soils rich in Al<sub>2</sub>O<sub>3</sub>. Without heavy vegetation the waters over soils rich in CaO were also rich in K<sub>2</sub>O. Without adequate CaO in the soil, the P<sub>2</sub>O<sub>5</sub> becomes bound by insol. Al and Fe compds. and does not enter the cycle soil-water-plankton-fish. Addition of P<sub>2</sub>O<sub>5</sub> to soils with inadequate CaO are ineffective until the soils contain at least 1500 mg. CaO per kg.

Frank Mareš

FASTYKOVSKAYA, Ye. D., Candidate of Med Sci (diss) -- "The problem of diagnosing cancer of the mammary gland (Roentgenography and investigation with radioactive phosphorus P-32)". Rostov na Donu, 1959. 11 pp (Rostov na Donu State Med Inst), 200 copies (KL, No 21, 1959, 121)

FASTYKOVSKAYA, Ye.D.

Mastopathy observed by X rays. Vest. rent. i rad. 36 no.6:49-50  
N-D '61. (MIRA 15:2)

1. Iz kafedry rentgenologii i radiologii (zav. - prof. A.I.Dombrovskiy)  
Rostovskogo-na-Donu meditsinskogo instituta (dir. - prof. P.P.Kovalenko).  
(BREAST\_\_RADIOGRAPHY)